I.   **AMENDMENTS TO THE CLAIMS**:

Please cancel claims 2, 7, 9, 11-14, 20, 24, 26, 28-31, 37, 41, 43, 45-48 and 54 without prejudice. Kindly amend claims 15-19, 32-36 and 49-53 as follows.

The following claims will replace all prior versions of claims in the above-captioned application.

LISTING OF THE CLAIMS:

Claims 1-14 have been cancelled.

15. (Currently Amended) A method of converting an expression form of a tree data structure represented by using parent-child relationship on a storage device, the parent-child relationship being defined by storing numbers assigned to parent nodes in the storage device in the order of numbers assigned to child nodes corresponding to the respective parent nodes, the method comprising the steps of:

~~a step of~~ calculating a generation number for each node in the tree data structure expressed in a depth-first mode for assigning numbers to nodes in the same generation as a certain node earlier than child nodes of the certain node, and a count of nodes belonging to each generation;

~~a step of~~ determining numbers assigned to nodes in each generation on the basis of the count of the nodes belonging to each generation when the numbers are assigned in a width-first mode for assigning numbers to child nodes of a certain node earlier than nodes in the same generation as the certain node;

~~a step of~~ creating a conversion array for converting the numbers assigned to the respective nodes in the depth-first mode to numbers to be assigned to the nodes in the width-

first mode on the basis of the calculated generation number for each node and the determined

numbers assigned to the nodes in each generation; and

a step of converting the parent-child relationship for each node to another parent-

child relationship expressed by the numbers assigned to the nodes in the width-first mode by

using the conversion array.

16. (Currently Amended) A method of converting an expression form of a tree data

structure represented by using parent-child relationship on a storage device, the parent-child

relationship being defined by storing numbers assigned to parent nodes in the storage device

in the order of numbers assigned to child nodes corresponding to the respective parent nodes,

the method comprising the steps of:

a step of counting a count of descendant nodes of each node in the tree data structure

expressed in a width-first mode for assigning numbers to child nodes of a certain node earlier

than nodes in the same generation as the certain node;

a step of creating a conversion array for converting the numbers assigned to the

respective nodes in the width-first mode to numbers to be assigned to the nodes in a depth-

first mode for assigning numbers to child nodes of a certain node earlier than nodes in the

same generation as the certain node, wherein the number to be assigned to current node is

calculated by adding a count of older sibling nodes which originate from the same parent

node as the current node and have been assigned their numbers earlier than the current node

and a count of descendant nodes of the respective older sibling node to the number to be

assigned to the parent node of the current node; and

a step of converting the parent-child relationship for each node to another parent-

child relationship expressed by the numbers assigned to the nodes in the depth-first mode by

using the conversion array.

17. (Currently Amended) A method of converting an expression form of a tree data structure represented by using parent-child relationship on a storage device, the parent-child relationship being defined by storing numbers assigned to parent nodes in the storage device in the order of numbers assigned to child nodes corresponding to the respective parent nodes, the method comprising the steps of:

a step of retrieving nodes in a depth-first order from the tree data structure expressed in a width-first mode for assigning numbers to child nodes of a certain node earlier than nodes in the same generation as the certain node, and creating a conversion array for converting the numbers assigned to the nodes in the width-first mode to numbers to be assigned to the nodes in a depth-first mode for assigning numbers to nodes in the same generation as a certain node earlier than child nodes of the certain node; and

a step of converting the parent-child relationship for each node to another parent-child relationship expressed by the numbers assigned to the nodes in the depth-first mode by using the conversion array.

18. (Currently Amended) A method of converting an expression form of a tree data structure represented by using parent-child relationship on a storage device, the parent-child relationship being defined by storing numbers assigned to parent nodes as elements of a first array in the storage device in the order of numbers assigned to child node corresponding to the respective parent nodes, the method comprising the steps of:

a step of counting an occurrence count of the numbers assigned to each node as an element of the first array;

a step of reserving consecutive locations corresponding to the counted occurrence count in the storage device as a second array in order to store numbers assigned to child nodes corresponding to each node; and

a step of successively reading the elements from the first array, and successively storing the numbers assigned to the child nodes corresponding to the elements in the first array as elements of the second array reserved for the nodes to which numbers having values equal to the read elements are assigned.

19. (Currently Amended) A method of converting an expression form of a tree data structure represented by using parent-child relationship on a storage device, the parent-child relationship being defined by storing numbers assigned to child nodes as elements of a first array in the storage device in the order of numbers assigned to parent nodes corresponding to the respective child nodes, the method comprising the steps of:

a step of reserving a second array in the storage device in order to store numbers assigned to the parent nodes corresponding to the respective child nodes in the order of the numbers assigned to the child nodes; and

a step of successively reading the elements from the first array and successively storing the numbers assigned to the parent nodes corresponding to the elements in the first array as elements of the second array reserved for the nodes to which numbers having values equal to the read elements are assigned.

Claims 20-31 have been cancelled.

32. (Currently Amended) An information processing device of converting an expression form of a tree data structure represented by using parent-child relationship on a storage device, said storage device holding the parent-child relationship defined by assigning numbers to parent nodes in the order of numbers assigned to child nodes corresponding to the respective parent nodes, the information processing device comprising:

means for calculating a generation number for each node in the tree data structure expressed in a depth-first mode for assigning numbers to nodes in the same generation as a certain node earlier than child nodes of the certain node, and counting a count of nodes belonging to each generation;

means for determining numbers assigned to nodes in each generation on the basis of the count of the nodes belonging to each generation when the numbers are assigned in a width-first mode for assigning numbers to child nodes of a certain node earlier than nodes in the same generation as the certain node;

means for creating a conversion array for converting the numbers assigned to the respective nodes in the depth-first mode to numbers to be assigned in the width-first mode on the basis of the calculated generation number for each node and the determined numbers assigned to the nodes in each generation; and

means for converting the parent-child relationship for each node to another parent-child relationship expressed by the numbers assigned to the nodes in the width-first mode by using the conversion array.

33. (Currently Amended) An information processing device of converting an expression form of a tree data structure represented by using parent-child relationship on a storage device, said storage device holding the parent-child relationship defined by assigning

numbers to parent nodes in the order of numbers assigned to child nodes corresponding to the respective parent nodes, the information processing device comprising:

means for counting a count of descendant nodes of each node in the tree data structure expressed in a width-first mode for assigning numbers to child nodes of a certain node earlier than nodes in the same generation as the certain node;

means for creating a conversion array for converting the numbers assigned to the respective nodes in the width-first mode to numbers to be assigned to the nodes in a depth-first mode for assigning numbers to child nodes of a certain node earlier than nodes in the same generation as the certain node, wherein the number to be assigned to current node is calculated by adding a count of older sibling nodes which originate from the same parent node as the current node and have been assigned their numbers earlier than the current node and a count of descendant nodes of the respective older sibling node to the number to be assigned to the parent node of the current node; and

means for converting the parent-child relationship for each node to another parent-child relationship expressed by the numbers assigned to the nodes in the depth-first mode by using the conversion array.

34. (Currently Amended) An information processing device of converting an expression form of a tree data structure represented by using parent-child relationship on a storage device, said storage device holding the parent-child relationship defined by assigning numbers to parent nodes in the order of numbers assigned to child nodes corresponding to the respective parent nodes, the information processing device comprising:

means for retrieving nodes in a depth-first order from the tree data structure expressed in a width-first mode for assigning numbers to child nodes of a certain node earlier than nodes in the same generation as the certain node, and creating a conversion array for

converting the numbers assigned to the nodes in the width-first mode to numbers to be

assigned to the nodes in a depth-first mode for assigning numbers to nodes in the same

generation as a certain node earlier than child nodes of the certain node; and

means for converting the parent-child relationship for each node to another parent-

child relationship expressed by the numbers assigned to the nodes in the depth-first mode by

using the conversion array.

35. (Currently Amended) An information processing device of converting an

expression form of a tree data structure represented by using parent-child relationship on a

storage device, wherein the storage device holds numbers assigned to parent nodes as

elements of a first array defining the parent-child relationship in the order of numbers

assigned to child node corresponding to the respective parent nodes, and said <u>information</u>

<u>processing</u> device comprises:

means for counting an occurrence count of the numbers assigned to each node as an

element of the first array;

means for reserving consecutive locations corresponding to the counted occurrence

count in the storage device as a second array in order to store numbers assigned to child

nodes corresponding to each node; and

means for successively reading the elements from the first array, and successively

storing the numbers assigned to the child nodes corresponding to the elements in the first

array as elements of the second array reserved for the nodes to which numbers having values

equal to the read elements are assigned.

36. (Currently Amended) An information processing device of converting an

expression form of a tree data structure represented by using parent-child relationship on a

storage device, wherein the storage device holds numbers assigned to child nodes as elements

of a first array defining the parent-child relationship in the order of numbers assigned to

parent node corresponding to the respective child nodes,~~,~~ and said <u>information processing</u>

device comprises:

means for reserving a second array in the storage device in order to store numbers

assigned to the parent nodes corresponding to the respective child nodes in the order of the

numbers assigned to the child nodes; and

means for successively reading the elements from the first array and successively

storing the numbers assigned to the parent nodes corresponding to the elements in the first

array as elements of the second array reserved for the nodes to which numbers having values

equal to the read elements are assigned.

Claims 37-48 have been cancelled.

49. (Currently Amended) A program <u>stored on a storage device, wherein the</u>

<u>program makes</u>~~for making~~ a computer <u>convert</u>~~of converting~~ an expression form of a tree data

structure <u>that is</u> represented by ~~a~~<u>using</u> parent-child relationship<u>, wherein the program makes</u>

<u>the computer execute the steps of</u> ~~on a storage device execute~~:

~~a function of~~<u>defining</u> the parent-child relationship by storing numbers assigned to

parent nodes in the storage device in the order of numbers assigned to child nodes

corresponding to the respective parent nodes;

~~a function of~~<u>calculating</u> a generation number for each node in the tree data structure

expressed in a depth-first mode for assigning numbers to nodes in the same generation as a

certain node earlier than child nodes of the certain node, and a count of nodes belonging to each generation;

~~a function of~~ determining numbers assigned to nodes in each generation on the basis of the count of the nodes belonging to each generation when the numbers are assigned in a width-first mode for assigning numbers to child nodes of a certain node earlier than nodes in the same generation as the certain node;

~~a function of~~ creating a conversion array for converting the numbers assigned to the respective nodes in the depth-first mode to numbers to be assigned to the nodes in the width-first mode on the basis of the calculated generation number for each node and the determined numbers assigned to the nodes in each generation; and

~~a function of~~ converting the parent-child relationship for each node to another parent-child relationship expressed by the numbers assigned to the nodes in the width-first mode by using the conversion array.

50. (Currently Amended) A program <u>stored on a storage device, wherein the program makes</u>~~for making~~ a computer <u>convert</u>~~of converting~~ an expression form of a tree data structure represented by <u>a</u>~~using~~ parent-child relationship<u>, wherein the program makes the computer execute the steps of</u> ~~on a storage device execute~~:

~~a function of~~ defining the parent-child relationship by storing numbers assigned to parent nodes in the storage device in the order of numbers assigned to child nodes corresponding to the respective parent nodes;

~~a function of~~ counting a count of descendant nodes of each node in the tree data structure expressed in a width-first mode for assigning numbers to child nodes of a certain node earlier than nodes in the same generation as the certain node;

a function of creating a conversion array for converting the numbers assigned to the respective nodes in the width-first mode to numbers to be assigned to the nodes in a depth-first mode for assigning numbers to child nodes of a certain node earlier than nodes in the same generation as the certain node, wherein the number to be assigned to current node is calculated by adding a count of older sibling nodes which originate from the same parent node as the current node and have been assigned their numbers earlier than the current node and a count of descendant nodes of the respective older sibling node to the number to be assigned to the parent node of the current node; and

a function of converting the parent-child relationship for each node to another parent-child relationship expressed by the numbers assigned to the nodes in the depth-first mode by using the conversion array.

51. (Currently Amended) A program stored on a storage device, wherein the program makesfor making a computer convertof converting an expression form of a tree data structure that is represented by ausing parent-child relationship, wherein the program makes the computer execute the steps of on a storage device execute:

a function of defining the parent-child relationship by storing numbers assigned to parent nodes in the storage device in the order of numbers assigned to child nodes corresponding to the respective parent nodes;

a function of retrieving nodes in a depth-first order from the tree data structure expressed in a width-first mode for assigning numbers to child nodes of a certain node earlier than nodes in the same generation as the certain node, and creating a conversion array for converting the numbers assigned to the nodes in the width-first mode to numbers to be assigned to the nodes in a depth-first mode for assigning numbers to nodes in the same generation as a certain node earlier than child nodes of the certain node; and

a function of converting the parent-child relationship for each node to another

parent-child relationship expressed by the numbers assigned to the nodes in the depth-first

mode by using the conversion array.

52. (Currently Amended) A program stored on a storage device, wherein the

program makesfor making a computer convertof converting an expression form of a tree data

structure that is represented by ausing parent-child relationship, wherein the program makes

the computer execute the steps of on a storage device execute:

a function of defining the parent-child relationship by storing numbers assigned to

parent nodes as elements of a first array in the storage device in the order of numbers

assigned to child node corresponding to the respective parent nodes;

a function of counting an occurrence count of the numbers assigned to each node as

an element of the first array;

a function of reserving consecutive locations corresponding to the counted

occurrence count in the storage device as a second array in order to store numbers assigned to

child nodes corresponding to each node; and

a function of successively reading the elements from the first array, and successively

storing the numbers assigned to the child nodes corresponding to the elements in the first

array as elements of the second array reserved for the nodes to which numbers having values

equal to the read elements are assigned.

53. (Currently Amended) A computer that convertsfor making a computer of

converting an expression form of a tree data structure that is represented by ausing parent-

child relationship on a storage device, wherein the computer executes the steps of:

a function of defining the parent-child relationship by storing numbers assigned to child nodes as elements of a first array in the storage device in the order of numbers assigned to parent nodes corresponding to the respective child nodes;

a function of reserving a second array in the storage device in order to store numbers assigned to the parent nodes corresponding to the respective child nodes in the order of the numbers assigned to the child nodes; and

a function of successively reading the elements from the first array and successively storing the numbers assigned to the parent nodes corresponding to the elements in the first array as elements of the second array reserved for the nodes to which numbers having values equal to the elements are assigned.

Claims 54-60 have been cancelled.